

# 4 COMs And The Roadblocks To The Success Of Construction Project Delivery In Universiti Teknologi Malaysia

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**Abstract.** Project management involves an application of processes, methods, knowledge, skills and experience to achieve project objectives and it plays important role in the successful completion of construction projects. The project is deemed as successful if it achieves the objectives according to their acceptance criteria, within an agreed timescale and budget. As projects are separate to business-as-usual activities, it requires people to come together temporarily to focus on specific project objectives thus some clients opt to employ project manager in ensuring the successful delivery of the project. This paper explores the role of 4COMs in ensuring the success of the project and highlight efforts made by Universiti Teknologi Malaysia to embedded the 4 COMs in the undertaking of its massive campus development. Based on real projects, the issues in 4COM quadrants are identified and analyzed. Although comfort seems to be less of issue in UTM's projects undertaking, the most common and crucial issues in project management are competence and commitment of consultants in performing their professional obligations. The inability to deliver the expected duties reasonably proved that competence and commitment should be one of the criteria for the selection of consultants in the future project. The combination of hard or technical skills and the human relation skills (competence and commitment) and the synergy from this significantly determine the success of the project.

## Introduction

Constructions projects involve numerous and complicated stages and processes thus demand the project management to have the ability to handle and effectively manage construction projects. Projects which vary are unique, transient endeavour and undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits. The construction project team comprises of a team of diverse people with cultural backgrounds and [1] show that construction project teams are a loose grouping of interested parties brought together temporarily for a specific construction project. This diversity has been identified as barriers to the success of the project delivery and has been recognised as an issues in project management.

In Malaysia, the development of public projects is funded by public fund which is allocated under the 5 Years Malaysian Plan. The need to effectively manage public funded projects is crucial for the purpose of accountability on the part of the client department or ministry and for value of money to the end-users. The client or departments are responsible in ensuring the prompt and successfully delivery of their development projects. Nonetheless, failures of some project due to poor management are highlighted by the Malaysia Economic Planning Unit (EPU) and National Audit Department.

Construction industry in Malaysia suffers high ratio in project failure in terms of cost, time and quality [2] and [3]. The EPU highlighted that the issues on construction project management arise throughout the life of the project; from the inception to the defect liability period. Malaysia Annual Audit Report consistently raised the concerns over the poor management of public projects development. Previous studies show that construction failures in Malaysia are attributed by the lack of knowledge and skills of project management [4], [5] and [6]. As projects generate serious

challenges due to complex and unpredictable nature which involves the requirement to possess necessary skills and knowledge in the managing the project.

In relation to the project success, previous studies explore other essential ingredients for the successful delivery of the project in meeting the 'golden triangle'. Critical success factors for construction form different dimensions have been critically discussed in various works. The parameters such as comfort, competence, commitment and communication began to be recognised as important drivers to the project success. This paper addresses 4COMs in managing public construction projects with particular reference to project developments undertaken by Universiti Teknologi Malaysia. Based on real construction experiences, the paper demonstrates how the 4 COMs has contributed and affected the success delivery of project in Universiti Teknologi Malaysia. Efforts to embed and nurture the culture of 4 COMs in the management of the projects resulted in successful completion of all projects without termination, no cost overrun and no casualties. Although all projects are finally delivered to the end-users, the issues arose throughout the projects execution which led to delay and sub-standard quality thus becoming lessons to the construction industry.

## **Project Management and Success**

Project management is the application of processes, methods, knowledge, skills and experience to achieve project objectives. The Economic Planning Units (EPU) defines project management as planning, controlling and coordination of a project from as early as conceptual to completion stages so as to meet the need and expectation of clients as well as to deliver project on time, within cost and based on the agreed quality. This is aligned with the definition by Project Management Institute Inc. (PMI) which defines project management as "the application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project." The main problem with project management practices have always been mentioned as planning, project implementation, cost and time overruns and non-achievement of quality. A great number of decisions need to be taken during the project management process and the decisions at the earlier phases of the design have a bigger impact on the project management practices and on the success of the project.

The success of the project is viewed differently. Project success is an abstract concept and determining whether a project is successful is subjective and extremely complex [7] and [8]. Traditionally, the success of the project is measured by successfully completing on time, within budget and set quality (referred as golden triangle). Researchers show that the successful projects warrants detailed criteria such as achieving project success is becoming more important in the highly competitive construction industry.

Research [9] differentiates project success (measured against the overall objectives of the project) against project management success (measured against the widespread and traditional measures of time, cost and quality). There are also distinctions between success criteria (the measure by which success or failure of a project will be judged) and success factor (those inputs to the management system that lead directly or indirectly to the success of the project) (Cooke-Davies, 2002). These success factors are further classified under two main categories; hard, and objectives, tangible and measurable and soft, subjective, intangible and less measurable. As for the former, the criteria of time, cost and quality were widely recognised while others such as health and safety, environmental sustainability, technical performance are factors with growing importance. As for the later, attainment of goals such as satisfaction, effective communication, relationship between project participants and absence of conflicts are considered as a sign of project success. As the large and complex construction projects are becoming more difficult to complete, the exploration on the critical success factors gained momentum as to extend the 'golden triangle' in promoting successful completion of the project. In relation to this, Han, Yusof, Ismail & Choon (2012: 90) advocate the suitability of the 4 COMs model proposed by Nguyen, Ogulana & Lan, which is considered suitable

for application in emerging economies. They suggest that the critical success factors of the projects can be summarised into 4(four) quadrants as in Table 1.0.

**Table 1.0 Critical Success Factors of Construction Projects**

<p><b>Competence</b></p> <ul style="list-style-type: none"> <li>▪ Technical competency</li> <li>▪ Personal</li> <li>▪ Contextual</li> <li>▪ Experienced and effective project team</li> <li>▪ Contractor</li> </ul>	<p><b>Commitment</b></p> <ul style="list-style-type: none"> <li>❖ Top management support</li> <li>❖ Commitment to project</li> <li>❖ Clear objectives</li> <li>❖ Political support</li> <li>❖ Degree of familiarity</li> </ul>
<p><b>Comfort</b></p> <ul style="list-style-type: none"> <li>• Involvement of stakeholders</li> <li>• Trust</li> <li>• Integrated Team</li> <li>• Performing Team</li> <li>• Availability Of Resources,</li> <li>• Adequate Funding</li> <li>• Comprehensive contract documentation</li> </ul>	<p><b>Communication</b></p> <ul style="list-style-type: none"> <li>✚ Shared project Vision</li> <li>✚ Regular update of the plans</li> <li>✚ Frequent project meeting</li> <li>✚ Community Involvement</li> <li>✚ Handover procedures</li> </ul>

**SUCCESSFUL  
PROJECT**

### 1.1 Competence

Table 1.0 show that one of the success factors is competence and Competency has been highlighted in Iyer and Jha (2005). Pakseresht and Asgari (2012) hence indicate that competent project team member is strongly influenced the success of the project. In relation to this, it is important to distinguish competence and competency. Competency is defined as the knowledge, skills and experience necessary to lead a project while Competence indicates sufficiency of knowledge and skill that enable someone to act in a wide variety of situations. The competencies needed as proposed by Modvar *et.al*, (2011) are Person-related competencies, Job-related competencies and Contextual competencies.

The professional project management classified competence into; technical, behavioural and contextual. Project management competencies consist of technical cover scope, time, cost, quality, risk, quality and human resource. Personal competencies include leadership, communication and problem solving. These competencies are expected from project teams thus it is crucial to select only those with appropriate competency to be in the project team. Competence is referring to the utilisation of up-to-date technology. Others include proper emphasis on previous experience, competent team in place and proper awarding to the competent parties in project execution. The selection of right and capable contractor and consultants is also crucial to project success. In addition, each team member must be able to recognise their role and responsibility and perform accordingly.

### 1.2 Commitment

Construction projects are typified by the involvement of a number of participants. Each project team member has the expertise, and would contribute towards the success of the project. However,

since their inputs are often interdependent, conflicts may arise in some circumstances. This is particularly evidence when they are working within limited resources in terms of time and budget. One cannot expect a project team to attain the necessary synergy when common goals are not being visualized or observed. Commitment which is close to collectivism rather than individualism range from support from top management, commitment of stakeholders and team members to the project, clear objectives and scope.

In addition to project team member, stakeholders are also important in the project management. In this new global economy, stakeholder engagement is increasingly becoming a part of construction project practice in order to deliver excellent project outcomes. For example stakeholder identification is a critical component of the initial scoping phase and should occur before an engagement plan is formulated and consultations begin. This is as each stakeholder usually has their own interest in the project which may cause different priorities, conflicts and dramatically increase the complexity of the situation [6]

In every project, particularly construction, there will be numerous parties involved directly or indirectly, from the very beginning to the end of the physical life of the project. It is difficult to request that all professionals implementing a construction project to have intrinsic responsibility for the whole project from planning to construction and maintenance due to various reasons. Nonetheless, goal assignment and acceptance, specific goal achievement and membership maintenance in an organization are the major antecedents of (affective and normative) commitment for construction professionals.

### **1.3 Comfort**

Comfort requires an involvement of stakeholders either primary or secondary. Regardless the stakeholders related legally or not form a direct part of the project, the need of each have to be managed and influenced in a manner that ensures project success. The presence of a project manager who possess both technical and soft skills is essential to the project's success. The technical skill is related to subject matter expert and in-depth knowledge and soft skills is focus on team management, emotional intelligence, transformational leadership and conflict management. Other includes resource management and setting financial plan.

The basic function of a construction's project phases is significant for forming a construction team, and defining its roles and responsibilities, not essentially according to contractual roles. Building team is crucial in creating 'comfort' in project undertaking. It is not just about putting together human resources and then deploying them on a project but it is the creation of a winning and collaborative spirit among team members so that they can work efficiently and in harmony with each other to achieve project goals. Covey (1989) discovers a simple sequence of events required in achieving effective teamwork and team synergy as:

RESPECT → TRUST → OPENNESS → SYNERGY = TEAMWORK

In relation to this, Uher and Loosemore (2004) identify barriers to teamwork such as disrespect and mistrust, among various project participants and professional rivalry must be overcome in developing and maintaining teamwork throughout the entire project's process. Trust as a game-changer, plays significant role in ensuring the smooth running of the project. Trust issues will affect how well participants deal with changes, constructability, contract administration, risk allocation, and solving disputes moreover trust issues will derail effective communication.

### **2.4 Communication**

Communication plays a vital role in all stages of construction such as design, production, organisation and management. Communication can be viewed from the hard and soft aspects. The hard areas cover matters such as briefs, contracts and meeting notes and other features of project

management. The ‘soft areas’ include human to human relationship building, mutual understanding and cooperation. The need for construction professional to communicate throughout all stages of construction is inevitable.

A clear communication among the project team members is vital to a project’s success. Good Communication is not only about the delivery of the message; it also means the reception of the message as intended. Good team building reinforces good communication as the team members are familiar enough with each other to express ideas. The project manager should assure that communication is open and supportive across the board when team members use active listening techniques and listen to each other without being evaluative. It is also important to keep every team member in the loop and duly informed – teams should be aware of the contract summary, deliverables, and client expectations; and then the teams should be asked to evaluate the expectations and deliverable in terms of how they can support the project. This will generate the ‘sense of belonging’ among the team members and may uncover latent team competencies, potentials, expertise and capabilities that a project manager might not be aware of. An effective communication system and its guidelines will tend to support the environment that people can interact directly and frequently with each other, people will feel that honest and open exchange of thought is encouraged and an effective system for handling documents is made available. As a result, people can tackle issues and resolve conflict more effectively. The above discussion shows that the importance of 4COMs in ensuring the success delivery of the project.

#### 4.0 Methodology

The paper analyses the issues relating to the 4COMs in the project developments undertaken in Universiti Teknologi Malaysia. The development scheme consists of 26 projects funded by the government under the 9<sup>th</sup> Malaysian Plan. Each project attempted to be delivered to the end-users consisting of various faculties in the university. Most of the project is managed by an in-house project management consists of 52 technical staffs. The in-house project management is assisted by 94 consultants from different specialisation as illustrated in Table 2.0. A total of 26 main contractors are involved in the development and each project is supported by diverse capacity of sub-contractors. The sites are attended by numbers of site staffs together with sub-contractors and workers. The presence of a professional team in project undertaking which aims to provide professional advice and monitoring based on their expertise. The total number of consultants employed in UTM’s project are as shown in table below. There are about 94 consultants from each field as indicated in Table 2.0. The statistic of the consultant is significant in this paper as the analysis and discussion on the 4COMs will emphasis on the consultants in the project.

Table 2.0 Consultants in the Projects

Num	Consultant	Quantity
1	Architect	21
2	Civil and Structure	21
3	Mechanical and Electrical	24
4	Quantity Surveying	22
5	Landscape	1
6	Land Surveyor	5

Despite delays encountered by most of the projects, all projects are successfully delivered to the end-users. A total of 90 applications for Extension of Time (EOT) have been recorded in the development of 26 projects where most of them are related to variation orders. About 82% of the application for EOT has been approved in the first year of project commencement, 69% in the second year and 65% in the subsequent year. The development of the projects also experienced

delay but all projects are successfully completed without any termination. The most serious delay recorded is 131% of initial time which was also contributed by UTM through interventions of consultants, whom acted on behalf of UTM. The projects also completed without cost overrun and with a good safety record. In general, all projects are successful but despite the initiation of various efforts to successfully implement the 4COMs in the project management, there were numbers of issues identified.

## 5.0 Analysis and Discussion

The focus is on the construction stage as this is the point where all the project goals of the contractual parties such as time, cost, performance, quality, safety are established and put to the test. An analysis presented in the four quadrants of 4 COMs to better illustrate the reality of the problems in the real projects. It is important to note that, before the projects kicked off, numbers of initiatives have been undertaken to gain synergy in the project team. Soul-searching sessions have been organised where project team member attended session to promote togetherness in project. Discussion and dialogue sessions were conducted with consultants, contractor and end-users to obtain input from the parties. Three (3) seminars on project management have been conducted for team members. In addition to the above efforts, a system was developed to better relay the information and actions to be taken as well as monitoring in the project undertaking.

Despite numerous efforts, the problems still occurred. An analysis of previous documents indicates that the problems which arose in the projects are contributed by factors such as follows;

- a) Lack of team working and team spirit is the major issue affecting the smooth running of the projects. It is accepted that the most crucial task in construction project is building a team that share common vision and mission to the successfully delivery of the project. As the project is kicked off, it is difficult to develop trust and encourage commitment. This may be due to the temporary nature of the project.

An example of lack of commitment among team members is exhibited by the failure to attend all site meetings as required especially when crucial decision has to be made or the key person did not turn up for the meeting which resulted important decision cannot be made. The resulted in delay in actions as the meetings are crucial in resolving the issues arising during the construction stage. Site meetings are generally accepted as the best and fastest ways to solve problems in construction.

Other example includes the irresponsive and insensitive among consultants to changes need in the design etc. The consultants failed to response on time and acknowledge and advise the clients (UTM) on the appropriate actions resulted in monetary loss to the clients. As a result, the client was forced to issue reminders and warnings to the consultants.

- b) In principle, the team should define and agree collectively upon common team and project goals that provide purpose, focus, and direction. It is important that goals should be specific, measurable, attainable, relevant, and time-bound. Nonetheless, the analysis indicates that the parties are not sharing the common goal, policy and the practices of the organisation. This has resulted in conflicts in projects.

As we are aware, construction projects are typified by the involvement of numbers of project team. Each project team has different expertise that is crucial to the success of the project. It is important for them to share the same ultimate goal to realise the success of the project. Nevertheless, since their inputs, the purpose and the motivation are different, conflicts may arise in some circumstances. This is worsening by discrepancies in some documents or directions such the unclear scope of work prepared by the consultants to be followed by site staffs. The project's mission and vision which has not been clearly transmitted to the team member

- c) Work Coordination becomes one of the serious issues in UTM's projects. As the task of coordinating has been assigned to the consultants, there are serious coordination problem

between consultants and UTM, consultant and end-users, consultant and consultant as well as consultant and contractor. Failure to notify the parties on the need to take necessary actions led to delay which some costs client time, monetary and quality loss.

- d) Team leadership: The effectiveness of leadership in project teams is a key indicator of team success. The analysis shows that there parties whom are assuming the role as leader in the project failed to dos so despite their responsibility to guide the team to achieve specific project goals. In most projects, consultants can be regarded as project leader or formally appointed. For example, the consultants appointed must quickly responded to the need of changes on scope of work or drawings but failed to dos so. It clearly indicated that the leaders in the projects have no clear understanding of the project objective hence less committed to the project.
- e) Technically Incompetent Team Member  
Some team members are incapable of performing tasks assigned to them. For example, the consultant is expected to offer an advice on the procedure to be followed and applications to be made to the local authorities in relation to development to be undertaken in the particular area. Hence inexperienced consultants are unable to advise the client the appropriate actions to be taken and in some circumstances had forced UTM to intervene to avoid further loss. Lack of knowledge on the consequences of delay in taking appropriate actions had severe impact on UTM. Delay in responding to the problem throughout the project undertaking as well as delay in certification, issuing related certificates such as Practical Completion brought disadvantages in the event of delay.  
There are consultants, who are not monitoring the progress of the work hence are unable to detect the real progress of the works. As a result, consultants who are the agent of the client failed within the reasonable time to act appropriately which give an advantages to the contractors in the event of an extension of time.  
The analysis shows that some of the design by incompetent consultants had resulted in defect in the construction.
- f) Inefficient and ineffective communication – site meetings have not been conducted regularly which resulted in some issues cannot be resolved as this is the best avenue to solve issues during the construction stage. Both, consultant and contractor should meet and discuss problems encountered but as decision cannot be made, the progress of the project is affected.  
Personal Clashes

As focus of the analysis is narrowed to consultants, competency among consultant The above discussion highlights that issues related to competence have contributed significantly to the success of the project.

## 6.0 Way Forward

As identified earlier, the success delivery of a project is significantly influenced by 4COMs. There are some aspects that require serious attention. It is prerequisite for the project to be led by capable leader. An effective leader should ensure team members clearly understand project objectives and share his/her commitment to achieving them. The leader must help each individual on the team perform his/her very best. The leader must be able to promote well integrated and high performing teams via the creation of environments where clear goals and the “vision” is communicated, Blue prints for the project are available to show how to achieve the goals, encouraged Trust, forethought and energy and getting the right people to involve in the project. There must be clear expectations about role to be played by each team members.

The team has a broad spectrum of team player types, including members, who emphasize attention to task, goal setting, focus on process, and questions about how the team functions. Many recognise that failure in any team working is attributed by lack of trust. The challenge is building the trust.



Trust can be build by asking people how they feel about decisions that will affect them and communicate effectively so people understand why certain decisions are being considered. Also central to building trust is the aspect of empowering people by providing the tools and information they need for success. People also need to feel they are valued, so when they bring up issues you should welcome the input. Most importantly, the approach should shift from the command-and-control decision making style to a collaborative process. The ‘soul searching’ for team member should be undertaken which allow them to meet and be familiar one with others. The involvement that develops trust can be promoted through open discussion. In this discussion, the team members are encouraged to express their opinions on the tasks as well as on the group’s operation, coupled with a high level of trust. Diversity should be appreciated and

Communication strategies should be based on a thorough understanding of the ways cooperate in joint undertakings, the key principles of social dynamics and learning theory plus ways in which people deliver, accept and understand words and pictures. The major need for communications to be systematic understood by all stakeholders and intelligently applied. Technology should be adopted for speedy transmission of the information from one party to another. The meeting should be mobilised as an effective tool to management. Regular and effective meeting enable the owner to identify the potential risk and respond as quickly as possible. The meeting should be mobilised as effective communication tool.

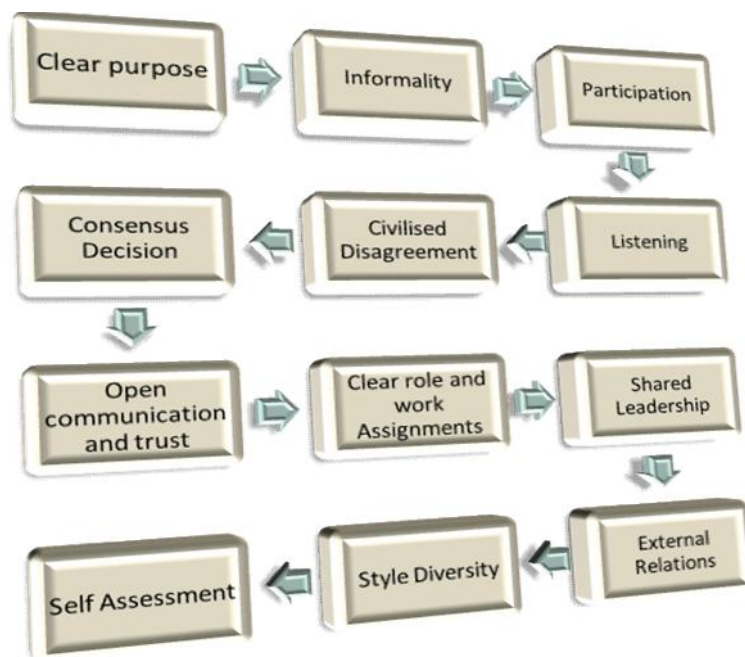


Figure 1.0 Characteristics of Effective Team for Project Success

## Conclusion

The constraints or roadblocks to the success delivery of project development emanate from various sources. The paper shows that the issues in project development rise throughout the life cycle of the project. The traditional measure of project success has extended to include the effectively and efficiently implemented of commitment, comfort, competent and communication. Lack of 4COMs has been demonstrated as having serious repercussion on the golden triangle in project management. Project team must seriously consider 4COMs for the better project’s goal attainment. To start with, professional in the project must consider



managing change and regard themselves as change agents adding to the project manager role an additional focus on so-called 'soft' aspect of relation management.

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